

MASTER'S DEGREE, FOREST SCIENCES, 2022-2023, 120 cr

ADVANCED STUDIES FOREST BIOECONOMY BUSINESS AND POLICY STUDY TRACK, 65 cr

After each course is the name of the course's responsible teacher.

	cr	study year
KK-ENG516/KK-ENG501 Academic writing (Language Center)	2	1-2
KK-ESP/KK-ITA/KK-KII/KK-RAN/KK-SAK/KK-VEN		
Another foreign language (CEFR B1) (Language Center)	3	1-2
FOR-002 Career portfolio and internship or a special project (Petri Parvinen, Juha Rikala)	5	1-2
FOR-003 Master's thesis seminar (Petri Parvinen)	5	2
FOR-004 Master's thesis (Kari Minkkinen)	30	2
FOR-101 Responsible business management in circular and bioeconomy (Angelina Korsunova-Tsaruk)	5	1
AGERE-A07b Sustainable financing	5	1
FOR-103 Survey methods in marketing and social sciences(Sami Berghäll)	5	1-2
FOR-104 International forest policy 2 (Maria Brockhaus)	5	1
VIKIM-001 Master's maturity test	0	2

ELECTIVE ADVANCED STUDIES

FOREST BIOECONOMY BUSINESS AND POLICY STUDY TRACK, CHOOSE 35 cr

	cr	study year
FOR-105 Sales management and business models (Petri Parvinen)	5	1-2
FOR-106 Yrityksen strategia ja yrityspeli (Mika Rekola, Juuso Töyli)	5	1-2
FOR-107 Private forestry and forest policy (Mika Rekola)	5	1-2
FOR-108 Qualitative empirical research methods, approaches and research ethics (Maria Brockhaus)	5	1-2
FOR-262 Forest bioenergy (Jori Uusitalo, V-P Kivinen)	5	1-2
YET-214 Climate and energy	5	1-2
FOR-111 Behavioural change and sustainability (Annukka Vainio)	5	1-2
AGFO-310/DENVI-115 Introduction to comparative policy research design (Maria Brockhaus)	5	1-2 (odd years)

Additional courses from Agricultural Economics, Environmental Change and Global Sustainability, Environmental and Resource Economics, Food Economics, Marketing, according to PSP

ELECTIVE STUDIES, FOREST BIOECONOMY BUSINESS AND POLICY STUDY TRACK, 20 cr

Studies according to the PSP

For example studies abroad, language studies, tutoring

Forest sciences courses from forest ecology and management -study track (ME-201-ME-241, FOR-211-FOR-

276)

FOR-011 Tieteen popularisointi (Petri Nummi) 3-5 cr
FOR-013 Studies with changing content 1-5 cr
FOR-014 Making a scientific article 1-12 cr
FOR-015 Working as a teaching assistant 1-5 cr
FOR-271 Practical course in bioinformatics (Fred Asiegbu) 5 cr
VIKIM-002 Tutoring 5 cr
VIKIM-003 Orientation week 1 cr
VIKIM-005 Demanding participation in administrative bodies and student organizations 2-5 cr
VIKIM-006 Halted training & support coaching 3 cr
VIKIM-100 Courses taken at other universities
VIKIM-200 Study module accomplished at another university
VIKIM-201 Study module accomplished abroad

Unipid study module: Sustainability in development 25 cr [Virtual Studies Module – UniPID](#)

MASTER’S DEGREE ALTOGETHER

120

ADVANCED STUDIES: FOREST ECOLOGY AND MANAGEMENT STUDY TRACK 79 cr

	cr	study year
FOR-002 Career portfolio and internship or a special project (Petri Parvinen, Juha Rikala)	5	1-2
FOR-003 Master’s thesis seminar (Kari Minkkinen, Risto Kasanen)	5	1-2
FOR-004 Master’s thesis (Kari Minkkinen)	30	1-2
FOR-005 Advanced literature (Kari Minkkinen)	5	1-2
FOR-006 R-basic course (Teppo Mattsson)	4	1-2
FOR-007 Tilastollisia malleja: Yleistettyjen lineaaristen mallien perusteet (Teppo Mattsson)	5	1-2
VIKIM-001 Master’s maturity essay	0	2
Module according to specialization	25	1-2

ELECTIVE STUDIES, FOREST ECOLOGY AND MANAGEMENT STUDY TRACK, 41 cr

Studies according to PSP

For example studies abroad, language studies, courses in statistics

Courses from forest economy, business and policy -study track (ME-101-ME-107, FOR-101-FOR-111)

FOR-008 Tilastollinen ennustaminen ja otanta (Teppo Mattsson) 5 cr

FOR-009 Statistical modelling with R (Teppo Mattsson) 5 cr
FOR-011 Tieteen popularisointi (Petri Nummi) 3-5 cr
FOR-013 Studies with changing content 1-5 cr
FOR-014 Making a scientific article 1-12 cr
FOR-015 Working as a teaching assistant 1-5 cr
FOR-271 Practical course in bioinformatics (Fred Asiegbu) 5 cr
ATM-309 Analysis of atmosphere-surface interactions and feedbacks 5 cr
KK-ENG501/KK-ENG512 Academic writing
VIKIM-002 Tutoring 5 cr
VIKIM-003 Orientation week 1 cr
VIKIM-005 Demanding participation in administrative bodies and student organizations 2-5 cr
VIKIM-006 Halted training & support coaching 3 cr
VIKIM-100 Courses taken at other universities
VIKIM-200 Study module accomplished at another university
VIKIM-201 Study module accomplished abroad

Unipid study module: Sustainability in development 25 cr [Virtual Studies Module – UniPID](#)

MASTER'S DEGREE ALTOGETHER

120

Modules in the master's degree

FOR-100 Advanced studies in forest bioeconomy business and policy/Metsäbiotalouden liiketoiminnan ja politiikan syventävät opinnot (Mika Rekola)
FOR-309 Advanced studies in Forest ecosystem function and environmental change/Metsäekosysteemien toiminnan ja ympäristömuutoksen syventävät opinnot (Jussi Heinonsalo)
FOR-310 Advanced studies in Forest production and ecosystem services/Metsien tuotoksen ja ekosysteemipalveluiden syventävät opinnot (N.N.)
FOR-311 Advanced studies in Forest resilience, diversity and wildlife/Metsien häiriönsietokyvyn, monimuotoisuuden ja riistanhoidon syventävät opinnot (Fred Asiegbu)
FOR-208 Advanced studies in forest resource management and geoinformatics/Metsävarojen hallinnan ja geoinformatiikan syventävät opinnot (Markus Holopainen)
FOR-209 Advanced studies in forest operations and supply management/Metsäteknologian ja logistiikan syventävät opinnot (Jori Uusitalo)
FOR-210 Advanced studies in wood technology/Puuteknologian syventävät opinnot (N.N.)
VIKIM-301 other studies in the master's degree (include electives 20 cr/41 cr)

MODULES ACCORDING TO SPECIALIZATION

FOREST ECOLOGY AND MANAGEMENT STUDY TRACK 25 cr

Choose at least one of the following modules

Forest ecosystem function and environmental change/Metsäekosysteemien toiminta ja ympäristönmuutos 25 cr

Theory and methods, choose at least 10 cr	cr	study year
FOR-217 Forests and peatlands as modifiers of atmospheric composition (Jaana Bäck)	5	
FOR-227 Methods to study forest soils (Kristiina Karhu)	5	
FOR-223 Ecology of peatlands (Harri Vasander)	5	(even years)
FOR-218 Basics of biometeorology (Teemu Hölttä)	3/5	
FOR-275 Soils and Climate Change (Kristiina Karhu)	5	(odd years)
FOR-228 Forest ecosystem biogeochemistry (Jussi Heinonsalo)	5	

Applications, choose at least 10 cr	cr	study year
FOR-215 Mitigation of climate change in forestry (Jaana Bäck)	5	(even years)
FOR-225 Turpeen käyttö Suomessa - tavoitteet ja ristiriidat (Kari Minkkinen)	5	(even years)
FOR-226 Restoration of degraded ecosystems: theory and practice (N.N.)	5	(odd years)
FOR-261 Environmental effects of forest operations (Jori Uusitalo)	5	
FOR-262 Forest bioenergy (Jori Uusitalo, V-P Kivinen)		5

Forest production and ecosystem services/Metsien tuotos ja ekosysteemipalvelut 25 cr

Theory and methods, choose at least 10 cr	cr	study year
FOR-211 Tree ecophysiology (Albert Porcar Castell)	5	
FOR-212 Forest production, growth and yield (N.N.)	5	
FOR-230 Forest soil and root ecology (Jussi Heinonsalo)	5	(even years)
FOR-214 Simulation of forest growth with ecological models (N.N.)	5	(even years)
FOR-247 Methods and tools in tropical forestry (Edward Webb)	5	(even years)
FOR-248 Field course: tropical forests and agroforests (Edward Webb)	5	(odd years)

Applications, choose at least 10 cr	cr	study year
FOR-216 Adaptation of forestry to climate change (Jaana Bäck)	5	(odd years)
FOR-219 Sustainable forest ecosystem management (Timo Kuuluvainen)	5	
FOR-220 Monitavoitteisen metsänhoidon menetelmät (Pasi Puttonen)	5	
FOR-221 Advanced silviculture (Pasi Puttonen)	5	
FOR-222 Taajama- ja virkistysalueiden metsien hoito (Pasi Puttonen)	5	
FOR-224 Soiden luonnonvarasuunnittelun kenttäkurssi (Kari Minkkinen)	5	(odd years)
FOR-276 Sustainable forestry and agroforestry in the tropics (Edward Webb)	5	

Forest resilience, diversity and wildlife/Metsien häiriönsietokyky, monimuotoisuus ja riistanhoito 25 cr**Theory and methods, choose at least 10 cr**

	cr	study year
FOR-272 Herbivoria (Carita Lindstedt-Kareksela)	5	(odd years)
FOR-274 Metsäentomologian syventävä lajintuntemus ja oma kokoelma (Carita Lindstedt-Kareksela)	5	
FOR-238 Alien species (Petri Nummi, Eshetu Yirdaw)	4	(even years)
FOR-242 Riistaeläintieteen syventävä lajintuntemus (V-M Väänänen)	3	
FOR-233 Advanced forest mycology & pathology (Fred Asiegbu)	10	
FOR-232 Forest microbiology (Fred Asiegbu)	10	

Applications, choose at least 10 cr

	cr	study year
FOR-231 Basic biotechnology applications in forestry (Fred Asiegbu)	5	
FOR-235 Multidisciplinary view on insect outbreaks and host-pathogen dynamics (Carita Lindstedt-Kareksela)	5	(odd years)
FOR-273 Forest health and ecosystem services (Carita Lindstedt-Kareksela)	5	(odd years)
FOR-246 Riistaeläintieteen ajankohtaiskysymykset (Petri Nummi, V-M Väänänen)	2	
FOR-243 Riistatalouden suunnittelu (V-M Väänänen)	3	(odd years)
FOR-244 Riista ja yhteiskunta (Petri Nummi)	2	(even years)
FOR-245 Riistatarhaus (Petri Nummi, V-M Väänänen)	2	
EEB-104 Nisäkäsekologian kenttäkurssi (Janne Sundell)	5	(odd years)

Forest Resource Management and Geoinformatics/Metsävarojen hallinta ja geoinformatiikka 25 cr**Compulsory course 10 cr**

	cr	study year
FOR-254 Metsävarojen inventointi- ja suunnitteluprojekti (Ilkka Korpela) (Can be completed in English)	10	1-2 (even years)

Choose at least 15 cr of the following

FOR-255 Metsien kehityksen simulointi (Jari Vauhkonen)	5	1-2 (odd years)
FOR-256 Metsävarojen hallinnan ja geoinformatiikan vaihtuvaisältöiset erikoistumisopinnot (Markus Holopainen)	1-5	1-2
FOR-263 Operations research in forest resource management (Jari Vauhkonen, V-P Kivinen)	5	1-2 (even years)
FOR-258 GIS-analyysi ja mallinnus (Markus Holopainen)	5	1-2 (even years)
FOR-259 GIS and RS in environmental and land use applications (Markus Holopainen)	5	1-2 (odd years)
FOR-260 Metsien kaukokartoituksen jatkokurssi (Markus Holopainen)	5	1 (odd years)

Recommended in Forest resource management and geoinformatics:

FOR-007 Tilastollisia malleja: Yleistettyjen lineaaristen mallien perusteet (Teppo Mattsson) 5 cr

FOR-008 Tilastollinen ennustaminen ja otanta (Teppo Mattsson) 5 cr

FOR-009 Statistical modelling with R (Teppo Mattsson) 5 cr

Forest operations and supply management /Metsäteknologia ja logistiikka 25 cr

Choose at least 25 cr of following	cr	study year
FOR-261 Environmental effects of forest operations (Jori Uusitalo)	5	1-2
FOR-262 Forest bioenergy (Jori Uusitalo, V-P Kivinen)	5	1-2
FOR-263 Operations research in forest resource management (Jari Vauhkonen, V-P Kivinen)	5	1-2 (even years)
FOR-264 Logistics and supply chain management (Jori Uusitalo)	5	1-2
FOR-265 Terramekaniikka (Jori Uusitalo)	5	1-2 (even years)
FOR-266 Wood Procurement – Supply chain and information management (Jori Uusitalo)	5	1 (odd years)

Wood Technology/Puuteknologia 25 cr

Compulsory courses 20 cr	cr	study year
FOR-267 Wood science (Juha Rikala)	5	1-2
FOR-268 Metsäteollisuuden laboratoriotyöt (Juha Rikala)	5	1-2
FOR-269 Puu rakennus- ja huonekalumateriaalina (Juha Rikala)	5	1-2
FOR-270 Wood as fibre raw material (Juha Rikala)	5	1 (even years)

Choose at least 5 cr of following	cr	study year
FOR-262 Forest Bioenergy (Jori Uusitalo, V-P Kivinen)	5	1-2
FOR-101 Responsible business management in circular and bioeconomy (Angelina Korsunova-Tsaruk)	5	1-2
AGERE-A07b Sustainable financing	5	1
FOR-106 Yrityksen strategia ja yrityspeli (Mika Rekola, Juuso Töyli)	5	1-2

MODULES OFFERED FOR OTHER DEGREE PROGRAMMES

FOR-301 Module in Geoinformatics/Geoinformatiikan opintokokonaisuus (Markus Holopainen)

FOR-302 Module in Tropical Forestry/Trooppisen metsänhoidon opintokokonaisuus (Edward Webb)

FOR-303 Module in Peatland Ecology and Management/Soiden ekologian ja käytön opintokokonaisuus (Kari

Minkkinen)

FOR-304 Module in Forest Soil Sciences/Metsämaatiieteen opintokokonaisuus (Jussi Heinonsalo)

FOR-305 Module in Forests and Climate change/Metsien ja ilmastomuutoksen opintokokonaisuus (Jaana Bäck)

FOR-306 Module in Forest biotechnology/Metsäbioteknologian opintokokonaisuus (Fred Asiegbu)

FOR-312 Module in Forest production ecology/Metsien tuotosekologian opintokokonaisuus (N.N.)

FOR-308 Module in management and restoration of forest and peatland ecosystems/ Metsä- ja suoekosysteemien hoidon ja ennallistamisen opintokokonaisuus (Pasi Puttonen, Harri Vasander)

Module in Geoinformatics/ Geoinformatiikan opintokokonaisuus 25 cr

Choose at least 25 cr of following	cr	timing
ME-203 Geoinformatiikka 1/ME-204 Geoinformatics 1	5	web course
ME-230 Geoinformatiikka 2	5	
ME-231 Open GIS and spatial data infrastructures	5	web course
ME-232 Kaukokartoitus 1	5	
ME-234 Basics in object-oriented programming in forest sciences	5	
FOR-258 GIS-analyysi ja mallinnus	5	(even years)
FOR-259 GIS and RS in environmental and land use operations	5	(odd years)
FOR-260 Metsien kaukokartoituksen jatkokurssi	5	(odd years)
GEOG-406 GIS in society (course in geography degree programme)	5	
GEOG-323 Remote sensing 2 (course in geography degree programme)	5	

Module in Tropical Forestry/Trooppisen metsänhoidon opintokokonaisuus 25 cr

Choose at least 25 cr of the following	cr	timing
ME-226 Agriculture, agroforestry and forestry in the tropics	5	
ME-227 Agroforestry 1 - Introduction to tropical agroforestry	5	
ME-228 Tropical forest ecology and conservation	5	
ME-229 Introduction to tropical forestry	5	
FOR-247 Methods and tools in tropical forestry	5	(even years)
FOR-253 Tropical forests and climate change	5	(odd years)
FOR-276 Sustainable forestry and agroforestry in the tropics	5	(even years)

Module in Peatland Ecology and Management/Soiden ekologian ja käytön opintokokonaisuus 25 cr

Choose at least 25 cr of the following	cr	timing
ME-201 Metsämaiden ominaisuudet, prosessit ja kasvupaikkaluokittelu	5	
ME-013B Metsätieteiden kenttäkurssi: metsä- ja suoekologia ja metsänhoito	6	
ME-216 Soiden ekohydrologia ja kasvillisuus	5	(odd years)
ME-217 Ojitusalue metsien hyödyntäminen: mahdollisuudet ja ongelmat	3	(odd years)

FOR-223 Ecology of Peatlands	5	(even years)
FOR-224 Soiden luonnonvarasuunnittelun kenttäkurssi	5	(odd years)
FOR-225 Turpeen käyttö Suomessa - tavoitteet ja ristiriidat	3	(even years)

Module in Forest Soil Sciences/ Metsämaatieteen opintokokonaisuus 25 cr

Choose at least 25 cr of the following	cr	timing
ME-201 Metsämaiden ominaisuudet, prosessit ja kasvupaikkaluokittelu	5	
ME-013B Metsätieteiden kenttäkurssi	6	
FOR-227 Methods to study forest soils	5	
FOR-228 Forest ecosystem biogeochemistry	5	
FOR-230 Forest Soil and root ecology	5	(even years)
AGRI-414 Pedogenesis and soil classification	3	
or other courses according to PSP		

Module in Forests and Climate Change/Metsien ja ilmastomuutoksen opintokokonaisuus 25 cr

Compulsory courses 17-19 cr	cr	
ME-210 Puiden aineenvaihdunta, kasvu ja rakenne	4	
FOR-211 Tree ecophysiology	5	
ME-211 Systeemianalyysi metsätieteissä	5	
Choose one of the following:		
FOR-218 Basics of biometeorology	3 or 5	
ATM-347 Rajakerroksen fysiikka 1 (Kumpula campus)	5	
Choose at least 6-8 cr of the following	cr	timing
FOR-215 Mitigation of climate change in forestry	5	(even years)
FOR-216 Adaptation of forestry to climate change	5	(odd years)
FOR-217 Forests and peatlands as modifiers of atmospheric composition	5	
ATM-332 Terrestrial water, carbon and nitrogen cycles (Kumpula campus)	5	
FOR-253 Tropical forests and climate change	5	(odd years)
ATM-302 Climate change now	2/5	

Module in Forest Biotechnology/Metsäbioteknologian opintokokonaisuus 30 cr

Compulsory courses	cr
FOR-231 Basic biotechnology applications in forestry	5
PBIO-112 Wood structure, growth and differentiation	5
FOR-232 Forest microbiology	10
FOR-233 Advanced forest mycology & pathology	10

Module in Forest Production Ecology/Metsien tuotosekologian opintokokonaisuus 15 cr

Compulsory courses	cr	timing
FOR-211 Tree ecophysiology	5	
FOR-212 Forest production, growth and yield	5	
One of the following:		
FOR-215 Mitigation of climate change in forestry	5	(even years)
FOR-216 Adaptation of forestry to climate change years)	5	(odd

FOR-308 Module in management and Restoration of Forest and Peatland Ecosystems/ Metsä- ja suoekosysteemien hoidon ja ennallistamisen opintokokonaisuus 25 cr

Choose at least 25 cr of the following	cr	timing
FOR-219 Sustainable forest ecosystem management	5	
FOR-220 Monitavoitteisen metsänhoidon menetelmät	5	
FOR-221 Advanced silviculture	5	
FOR-222 Taajama- ja virkistysalueiden metsien hoito	5	
FOR-223 Ecology of peatlands	5	(even years)
FOR-224 Soiden luonnonvarasuunnittelun kenttäkurssi	5	(even years)
FOR-225 Turpeen käyttö Suomessa - tavoitteet ja ristiriidat	5	(even years)
FOR-226 Restoration of degraded ecosystems: Theory and practice	5	(odd years)
FOR-262 Forest bioenergy	5	